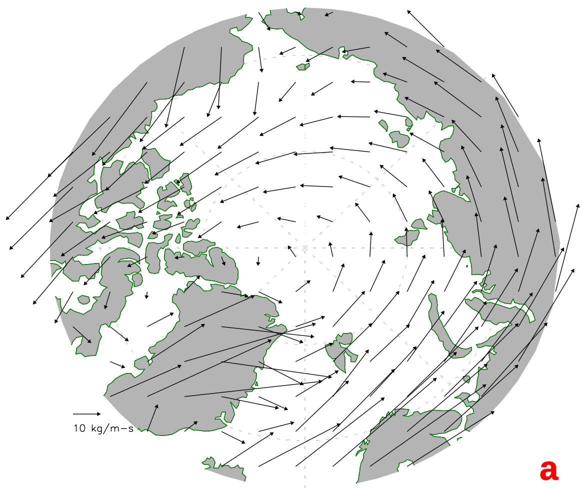
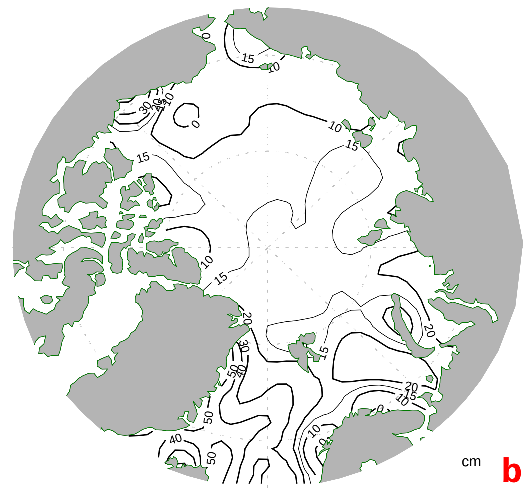
Moisture Transport and P-E

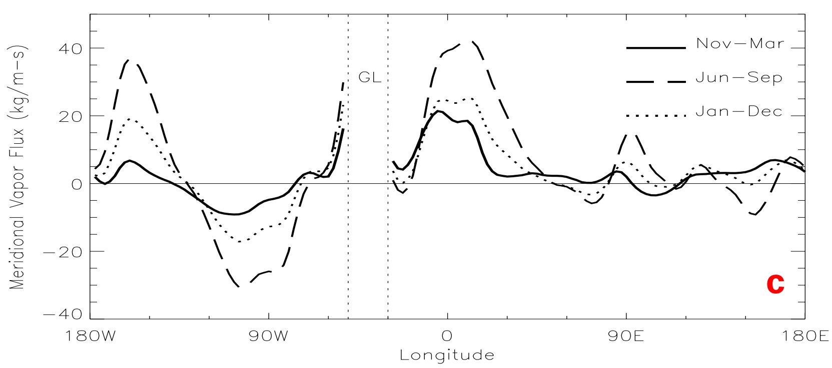
Annual Mean PW Flux



Annual Mean P-E

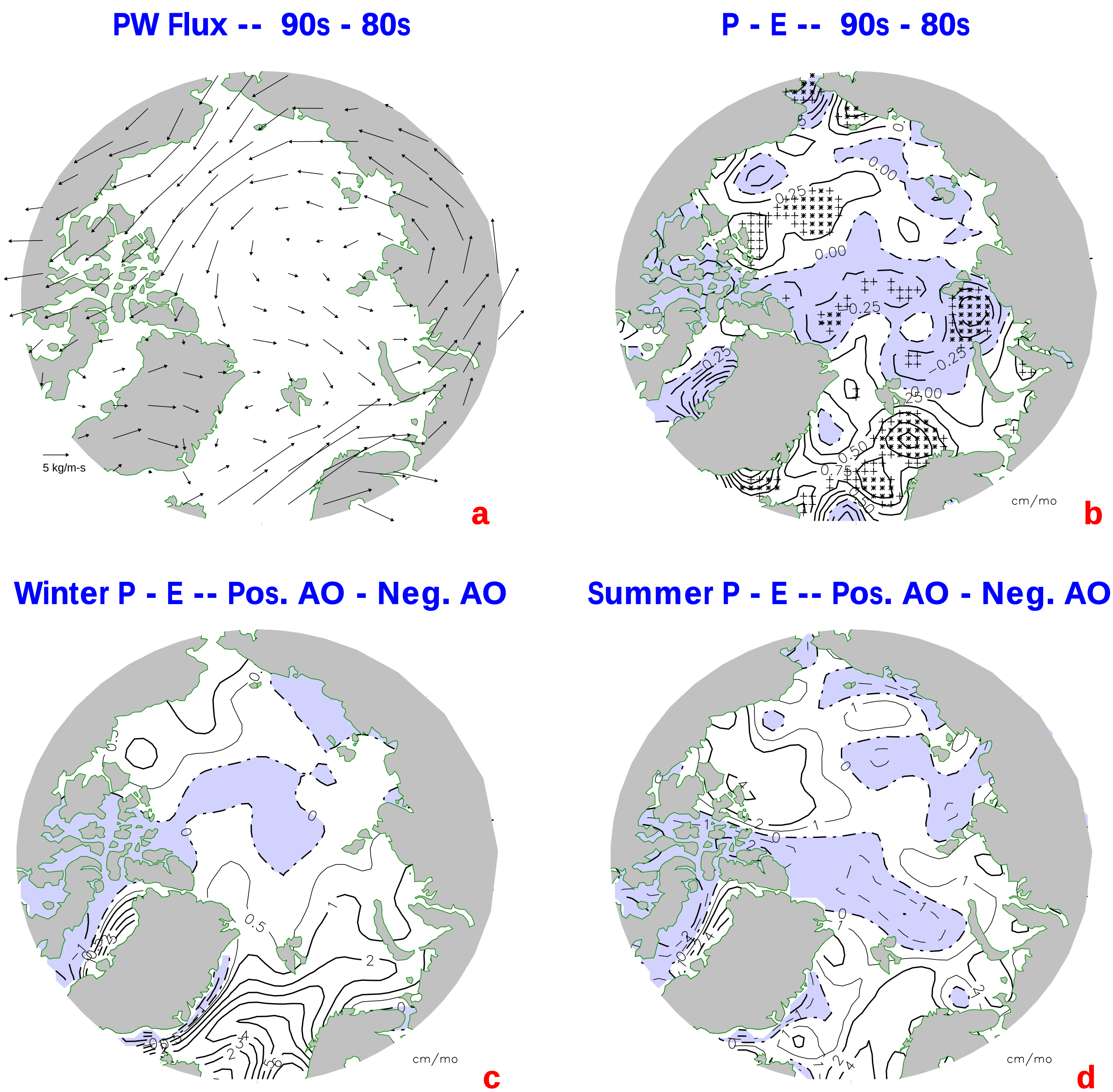


PW Flux Across 70°N



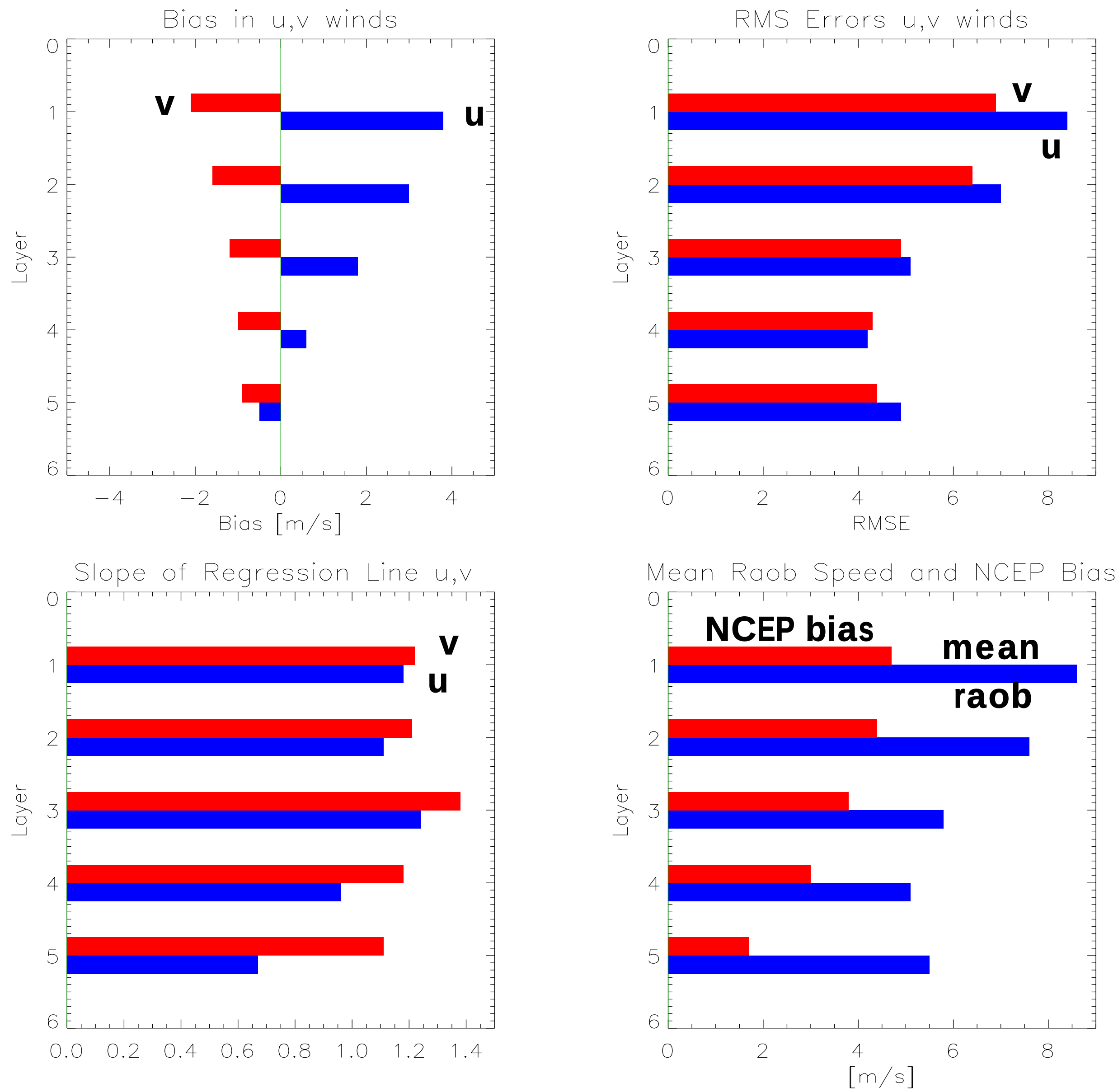
Moisture transport is derived from TOVS precipitable water (PW) retrievals and NCEP Reanalysis upper level winds. (a) is the annual-mean PW flux (kg $m^{-1}s^{-1}$) averaged over 19 years (1980-1998); (b) is the annual mean net precipitation (P-E; cm yr^{-1}); and (c) is the seasonal mean, meridional PW flux across 70°N

Trends in Moisture Transport and P-E



Path-P calculated changes in PW flux and P-E: (a) is the difference in PW flux between the 1980s and 1990s; (b) is the decadal difference in P-E; and (c) and (d) show the difference in P-E between positive-AO and negative-AO days during winter and summer. From Groves and Francis [2001a, b].

Trends in Upper-Level NCEP Winds



Advection of sensible heat and moisture are calculated using upper-level winds from the NCEP Reanalysis. Wind fields are difficult to validate because all available rawinsondes were assimilated into the reanalysis. Rawinsondes from the CEAREX (1988, NE of Svalbard) and LeadEx (1992, Beaufort Sea) field experiments, however, were not assimilated, and therefore constitute independent data. This plot displays summary statistics of the comparison with NCEP winds (ERA winds are very similar). While reanalyses provide the best wind fields available at present, there is a clear need for more accurate data. Layers 1-5 are bounded by (top down): 300, 400, 500, 700, 850, and 1000 mb.

Downwelling Longwave Fluxes from TOVS Path-P